

SIP RACT for The Proctor & Gamble Paper Products Company

Instructions:

The form is broken into three main sections:

- Description of source

The two paper machines are housed in separate buildings and are comprised of the following equipment per machine: drying section with a natural gas fired duct burner system with a combined heat input of 150 MMBTU/hr, moisture and PM₁₀ cyclone and a venturi scrubber to assist in the removal of the particulates. Each paper machine has up to five individual permitted process exhaust stacks, as well as additional room exhaust vents.

The two Converting Rooms house the equipment used to convert the paper roll stock obtained from the paper machine into individual paper products for distribution. The converting operations consist of two separate converting buildings, each housing three converting lines. Fugitive emissions within this operation are routed to three dust control systems for each converting building. Each dust control system consists of one drum filter and is vented to a separate stack, totaling six stacks for the overall converting operations.

Steam is essential for the paper making facility and boilers are installed to supply steam for the paper making machines. Each boiler is rated at approximately 60.243 MMBTU/hr and is operated on natural gas as primary fuel and propane as secondary (only during natural gas curtailment). Emissions from each boiler are vented through its own single stack.

The space heaters are operated on natural gas and are located as discussed below. Each paper machine room has up to 3 direct fired heaters with a total heat input of approximately 40.3 MMBTU/hr. The converting rooms have two direct fired heaters with a total heat input capacity of approximately 2.2 MMBTU/hr and the distribution warehouse has several space heaters with a combined heat input rating of approximately 25 MMBTU/hr. The total heat input for all direct fired heater units combined throughout the facility are approximately 107.8 MMBTU/hr.

- **Analysis and summary of RACT determination options by pollutant**

EMISSION UNIT/SOURCE

Paper Machine 15B (MCH1)

DESCRIPTION AND EMISSION PROFILE

The sources of air emissions for the paper machine emission unit include the particulate matter generated during the paper forming activities and NO_x emissions released by the natural gas burners providing hot air for drying of the formed paper web. The papermaking process mainly consists of three stages. In the initial stock preparation stage, pulp, additives, and water are mixed to form slurry. The slurry is then fed to a former unit, where the sheet screening, formation of paper, and draining occurs. Finally, the wet paper undergoes the drying stage, where the wet paper web is passed through drying zones. The dried web exiting the dry end part of the paper

machine is wound on large rolls for further processing in the converting area. The emission points associated with MCH1 include four stacks and four papermaking building roof exhausters.

The annual potential-to-emit rates (PTEs) in tons/yr for MCH1 for PM/PM10/PM2.5 and NOx are shown below. The bases of the emission data are the Approval Order No. DAQE-AN0141070001-08, issued on February 20, 2008 by the UDEQ and the air permit application data submitted by P&G for the approval order. The PM/PM10/PM2.5 emissions in the following table represent the filterable portion. Data for quantifying the condensable PM/PM10/PM2.5 portion are currently not available.

Table 1 – Paper Machine 15B (MCH1) PTEs

Title V Application ID	Emission Unit	Potential-to-Emit (PTE), tons/year		
		PM/PM10	PM2.5	NOx
	Paper Machine- Wet Exhaust Stack	4.82		
	Paper Machine- Process Stack- Process*	23.99		
	Paper Machine- Process Stack- Combustion*	5.13	5.13	59.13
MCH1 - Paper Machine 15B				
	Paper Machine- Under Dryer Stack	5.26		
	Paper Machine- Dry End Stack	5.48		
	Paper Machine - Roof Exhausts (4)	6.57		
	Paper Machine- Total	51.25	5.13	59.13

* The breakdown of process and combustion emission components are shown for RACT discussion purposes only. These emissions are released as a mixed stream from the process stack.

RACT Analysis Approach

The RACT evaluation for MCH1 is presented for PM2.5 and the pollutants shown in the emission table above. The evaluation includes the discussion of in-place control measures, past control technology evaluations, applicability evaluation of additional emission control measures, and demonstration of RACT. No PM2.5 speciation data for the MCH1 process sources are available; therefore, the RACT analysis for PM2.5 is represented by a RACT measures review for PM/PM10. PM2.5 is a subset of PM/PM10 and control measures applicable to PM/PM10 also apply to PM2.5.

PM2.5 RACT Analysis

In-Place Control Measures

The MCH1 wet exhaust stack emissions are controlled by a cyclonic separator and the dry end stack emissions are controlled by a venturi scrubber. Although the primary function of the wet end cyclonic separator is to capture the excess moisture contained in the exhaust stream, it also removes particulate matter from the exhaust stream. The dry end section accounts for over 50 percent of the total uncontrolled emissions from MCH1. In order to maximize emissions control, suction pickup hoods are located at various strategic points and the collected exhaust streams are controlled by the dry end venturi scrubber. In addition to the cyclonic separator and venturi scrubber controls, all uncontrolled MCH1 stack exhausts have extremely low PM concentrations that are comparable to or lower than the exhaust streams controlled by conventional PM control systems such as electrostatic precipitators (ESPs) and fabric filters. The PM concentration of the MCH1 process stack, under dryer stack, and each room exhaust are less than 0.005 grains/acf, 0.003 grains/acf, and 0.0008 grains/acf, respectively.

The MCH1 burners fire natural gas, which is considered a clean fossil fuel, and its combustion results in minimal PM2.5 emissions. The burners also employ good combustion practices and the

plant maintains the burners in good operating condition by performing regular maintenance and tune-ups per manufacturer recommendations.

Previous Determinations

A detailed Best Available Control Technology (BACT) evaluation was conducted for MCH1 as part of its permit application review process in 2007 in support of the Approval Order No. DAQE-AN0141070001-08, which was issued on February 20, 2008 by the UDEQ.

The 2007 BACT evaluation demonstrated that the ESP and fabric filtration technologies were technically not feasible for additional control of MCH1 emissions. The cost-effectiveness of the venturi scrubber system for the process stack for a paper machine installation similar to MCH1 was determined to be in excess of \$23,000/ton, which is determined to be cost prohibitive as a RACT and BACT measure.

Applicable Regulatory Emission Standards

There are no federal standards related to PM/PM10/PM2.5 that are applicable to MCH1. MCH1 stacks are subject to a 20 percent opacity visible emission limit in the federally enforceable Approval Order No. DAQE- AN0141070001-08. Opacity of stack emissions is an indicator of the level of PM2.5 emissions, and therefore, compliance with the opacity limit for MCH1 stacks also limits the PM2.5 emissions.

Conclusions

Controlling wet end emissions using a cyclonic separator, dry end emissions using a venturi scrubber, inherently low PM concentration of uncontrolled stacks, natural gas burners, and established work practice measures collectively represent RACT for MCH1. The ESP and fabric filter add-on controls are not technically feasible and the venturi scrubber is cost prohibitive.

The RACT/BACT/LAER Clearinghouse (RBLC) database maintained by EPA and other public domain data indicated no PM2.5 add-on controls for sources similar to MCH1.

NOX RACT Analysis

In-Place Control Measures

MCH1 burners fire natural gas, are a low-NOX design, and employ good combustion practices. The plant maintains the burners in good operating condition by performing regular maintenance and tune-ups per manufacturer recommendations.

The applicable emission limit for NOX for MCH1 burners in Approval Order No. DAQE-AN0141070001-08 is 0.09 lb/MMBtu and the plant has demonstrated compliance with this limit via emission testing.

Previous Determinations

A BACT evaluation was conducted for MCH1 burners as part of its permit application review process in 2007 in support of the Approval Order No. DAQE-AN0141070001-08, which was issued on February 20, 2008 by the UDEQ. The BACT evaluation demonstrated the technical non-feasibility of the use of additives such as ammonia for breakdown of combustion NOX and the use of post-combustion controls.

Applicable Regulatory Emission Standards

There are no federal standards applicable to NOX emissions from the MCH1 burners. The federally enforceable Approval Order No. DAQE- AN0141070001-08 requires the use of low-NOX burners for the MCH1 burners and limits NOX emission to 0.09 lb/MMBtu.

Conclusions

Firing of natural gas, low-NOX burner technology, and good combustion practices limit the emissions of NOX and represent RACT for MCH1 burners.

- **Limitations/monitoring details for each option recommended**

Emissions to the atmosphere from the paper machine shall not exceed the following rates and concentrations:

PM2.5 is to be determined by testing using an EPA method test by January 1, 2015 and submit the results it to UDEQ to be entered into the federally enforceable Approval Order and Title V permits.

PM10 is to be limited to 6.65 pounds per hour. Testing shall be conducted using an EPA method test at least every five years.

No NOX emissions limit/testing shall be conducted for the paper machine.

Existing PTE / Allowable Emissions

PM10	PM2.5	SO2	NOx	VOC	CO	NH3	Benzene	Chlorine	HCl
167.74	167.74	2.07	193.68	191.61	210.33	0.00	0.00	0.00	0.00

Emissions Information / Discussion

The Paper Machine is the largest emitting unit of PM10 and PM2.5 (35.47 ton per year of PM10/PM2.5) located at the Paper Products site.